EAD773.01

June 12, 1990

Dr. Robert Hamilton
Raven Services Corporation
2200 Sixth Avenue, Suite 519
Seattle, WA 98121

Dear Dr. Hamilton:

This letter authorizes Raven Services to perform work authorization 90-6, "1990 Quarterly Monitoring of the Georgetown Flume." Enclosed is the scope of work and project budget; the total budget allowed for this project is $7,150.00. Of this total, $1,040 is for WBE subcontractor work and $2,450 is for MBE subcontractor work.

Thank you for your assistance to City Light.

Sincerely,

Kirvil Skinnarland

Kirvil Skinnarland, Director
Environmental Affairs Division

CO:pb

Enclosure

bcc: w/enclosure
O'Quinn
Tenney
EAD 773.01
File

SCL 04957

CTY0049914

SEA290392

Work Order 90-6

1990 Quarterly Monitoring of the Georgetown Flume

I. SCOPE OF WORK

In November 1985, PCB-contaminated sediments were removed from the Georgetown Flume system. PCB-contaminated soils in the catch basin area of the Steam Plant yard were also excavated during the 1985 cleanup. In 1987, to comply with a Department of Ecology order and to ensure that the Flume was not recontaminated with PCBs, City Light established a monitoring program. Since 1987, Raven Systems has collected sediment samples along the Flume on a quarterly basis. This monitoring program will continue until the Flume is closed and filled in. Sample locations, which are described below, are consistent with collection points originally established in 1987.

In 1989, City Light began an additional sampling project designed to determine PCB levels in the Flume's wooden interior lining. Several wood core samples from the Flume's floorboards were collected and analyzed for PCB content. This sampling will continue and be completed in 1990. In addition, the 1990 monitoring program will include sampling of the catch basin area of the Steam Plant yard. No sampling has been conducted in this area since the 1985 cleanup. The location of wood core and soil samples is described in section II below.

Finally, water temperatures at the flume head and at the end of the double pipes will be recorded each quarter. The state of the tide and Flume sediment and water conditions will also be reported.

II. SAMPLES

Routine PCB Monitoring:
Sediment samples will be collected at 7 monitoring points along the flume as follows:

#1 and #2 - Flume Head	2 composites of 2 subsamples
#3 - Head of Double Pipes	1 composite of 2 subsamples
#4 - Above Tidegate	1 composite of 4 subsamples
#5 - Below Tidegate	1 composite of 4 subsamples
#6 - Willow Street	1 composite of 2 subsamples
#7 - Slip 4 Outfall	1 composite of 2 subsamples

Additional 1st Quarter Sample Collection:

During the first quarter only, Raven will collect soil samples from the 1985 cleanup site near the Steam Plant building. In addition, 4 wood core samples will be collected along the flume above the Tidegate; this will complete characterization of the wooden flume sections.

At the 1985 cleanup site, monitoring will consist of 3 composite soil samples of 3 subsamples each. Soil sample collection should be concentrated in the catch basin area since the probability of recontamination is highest in this portion of the Steam Plant yard.

All samples shall be analyzed for PCBs at the MBE laboratory in Portland, Oregon. Analytical results shall be reported as ppm PCB citing specific aroclor mixtures detected. Original lab data describing QA/QC procedures, detection limits plus any other relevant information shall be included with each quarterly report.

III. SAMPLE METHODOLOGY AND REPORT

A. Methodology

1. Collection, storage, processing, and analysis of samples will be according to current United States Environmental Protection Agency (USEPA) standards. PCB analysis will follow Method 8080 (USEPA document SW-846, 1986).

2. Sampling equipment will be decontaminated between each sample. Solvent rinse will be collected.

3. Appropriate protective gear will be used to ensure safety for the sampling crew.

4. After analysis is completed, any remaining sample materials, if they constitute a hazardous material, may be returned to City Light for appropriate disposal.

5. Drawings will be provided on which the location of samples will be marked.

6. Sample chain-of custody procedures will be used when requested.

B. Report

This report will include:

1. Description of the conditions and date(s) of sample collection.
2. Documentation detailing all steps taken to prepare sampling equipment and containers so as to avoid sample contamination or cross-contamination.
3. Description of containers, procedures, reagents, etc., used for sample collection, preservation, transport, and storage.
4. Statement of field sampling procedures.
5. Sample preservation methods and holding time.
6. Sample chain-of-custody procedures when required.
7. Documentation of methods used for sample processing and analysis including any changes from the test procedures in Method 8080 in method, apparatus, reagents, calibration, quality control, extraction, separation, gas chromatography, or calculations.
8. Laboratory results are to be expressed on a dry-weight basis and by identifying PCB composition or Arochlor species; results also will include a brief description of the sample matrix; e.g., concrete, soil, water, gravel etc.).
9. Documentation of each sampling site.
10. Interpretation of the data along with conclusions and recommendations.

IV. PROJECT SCHEDULE

Deliverable Items	Due Date
Sample collection	Day 0
Draft report	Day 21
Final report to EAD	one week after review of draft by EAD

SCL 04960

V. PROJECT BUDGET

1st Quarter Budget:

Startup:	$ 90.00
Field:	
project manager-reconnaissance (3 hours @ $47/hour)	141.00
project manager (8 hours @ $47/hour)	376.00
Office and Preparation:	
project manager (4 hours @ $45/hour)	180.00
project assistant (7 hours @ $35/hour)	245.00
administrative support (2 hours @ $24/hour)	48.00
WBE graphics preparation (14 hours @ $40/hour)	560.00
15% WBE carrying cost (15% x $560.00)	84.00
Other:	
MBE PCB analysis (10 sediment samples @ $70/each)	700.00
(4 wood core samples @ $70/each)	280.00
15% MBE carrying cost (15% x 980.00)	147.00
chemicals and glassware	29.00
mileage and travel (40 miles @ .25/mile)	10.00
Subtotal - 1st Quarter Budget	$2,890.00

2nd Quarter Budget:	
Startup:	90.00
Field:	
project manager (6 hours @ $47/hour)	282.00
Office and Preparation:	
project manager (4 hours @ $45/hour)	180.00
administrative support (1 hour @ $24/hour)	24.00
WBE graphics preparation (4 hours @ $40/hour)	160.00
15% WBE carrying cost (15% x $160.00)	24.00
Other:	
MBE PCB analysis (7 sediment samples @ $70/each)	490.00
15% MBE carrying cost (15% x $490.00)	73.50
chemicals and glassware	19.00
mileage and travel (30 miles @ .25/mile)	7.50
Subtotal - 2nd Quarter Budget	$1,350.00

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3rd Quarter Budget:	
Startup:	$ 90.00
Field:	
project manager (6 hours @ $47/hour)	282.00
Office and Preparation:	
project manager (4 hours @ $45/hour)	180.00
administrative support (1 hour @ $24/hour)	24.00
WBE graphics preparation (4 hours @ $40/hour)	160.00
15% WBE carrying cost (15% x $160.00)	24.00
Other:	
MBE PCB analysis (7 sediment samples @ $70/each)	490.00
15% MBE carrying cost (15% x $490.00)	73.50
chemicals and glassware	19.00
mileage and travel (30 miles @ .25/mile)	7.50
Subtotal - 3rd Quarter Budget	$1,350.00

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4th Quarter Budget:		
Startup:	$	90.00
Field:		
project manager (8 hours @ $47/hour)		376.00
Office and Preparation:		
project manager (6 hours @ $45/hour)		270.00
administrative support (2 hours @ $24/hour)		48.00
WBE graphics preparation (4 hours @ $40/hour)		160.00
15% WBE carrying cost (15% x $160.00)		24.00
Other:		
MBE PCB analysis (7 sediment samples @ $70/each)		490.00
15% MBE carrying cost (15% x $490.00)		73.50
chemicals and glassware		19.00
mileage and travel (40 miles @ .25/mile)		10.00
Subtotal - 4th Quarter Budget		$1,560.50
TOTAL 1990 BUDGET		$7,150.50